

PREDATORY BEHAVIOUR OF AN ASSASSIN SPIDER, *CHORIZOPES* SP. (ARANEIDAE), AND THE DEFENSIVE BEHAVIOR OF ITS PREY¹

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The araneid spider *Chorizopes* sp. preys on other araneids, using the aggressive response of its prey toward smaller-sized intruders in their webs to lure them to their death. One prey species (*Leucauge* sp.) avoids attacks by cutting free sectors of the web which hold the predator.

INTRODUCTION

Spiders are generally thought of as solitary animals which react aggressively toward others of their own kind, and this seems to be the general rule in orb weaving spiders. Web owners usually respond to the presence of other spiders by shaking the web strongly; if the invader is smaller and does not leave, the owner moves toward it and chases it from the web (e.g. Buskirk 1975, Eberhard *et al.* 1979, Lahmann and Eberhard 1979, pers. obs. of *Alpaida*, *Cyclosa*, *Cyrtarachne*, *Leucauge*, *Metazygia*, *Nephilengys*, *Tetragnatha*, *Philoponella*, and *Uloborus*). This note describes the behaviour of a rare and previously unstudied spider, *Chorizopes* sp. (Araneidae), which appears to prey regularly on orb weavers by taking advantage of this aggressive response.

It is probably common for spiders to prey on each other (e.g. Bristowe 1958, Turner 1979), but most of this predation probably results from chance encounters involving species which take a large variety of other kinds of prey. There are three spider groups known to be specialized spider predators,

however: Mimetidae (e.g. Bristowe 1958), Archaeidae (Kaestner 1968), and some species of the theridiid genus *Argyrodes* (Clyne 1979, Eberhard *in prep.*). This appears to be the first report of regular predation on other spiders by an araneid.

These observations were made in Nov. 1979 during the monsoon at Ayyanar Falls (c. 300 m.) 5 km W. of Rajapalayam, Tamilnadu, India. The spiders were moderately common in underbrush in deciduous forest, but were not found in adjoining thorn scrub.

The first indication that *Chorizopes* preyed on web weaving spiders came from finding four individuals (three mature females and one penultimate female) in close association with freshly dead araneids (three mature *Leucauge* sp., and one mature female *Cyrtarachne* sp.). In all cases the *Chorizopes* was substantially smaller than the other spider. Two of them were apparently feeding on the dead spider (mouth in contact with it, other spider somewhat shrivelled). As I watched, a third *Chorizopes* wrapped an apparently freshly dead *Leucauge* with slow alternate movements of legs IV, then slowly transported it along the edge of the *Leucauge* web, using complex behaviour involving fastening it to a frame line, then breaking the frame and letting it sag by letting out silk until the

¹ Accepted November 1980.

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prey hung vertically, then raising the prey to attach it to the frame again and repeat the process until the prey was completely off the web and under a leaf. There the spider spun a small mesh sustaining the prey and began to feed. Three times during the transportation process the spider paused, moved to the anterior end of the prey, and pressed its mouth against the prey's mouth for several seconds, perhaps feeding.

I succeeded in confirming this suggestive evidence of predation by witnessing an attack in the following circumstances. I found a mature female *Leucauge* sp. in the midst of web construction 30-60 min. after the end of a rain shower, after all nearby conspecifics had finished their webs. Close inspection of this web showed partially collapsed radii in one sector, and other threads which suggested that an anchor thread on that side of the web had been broken near the end of radius construction, and that the spider had tightened up the damaged sector and continued building. The *Leucauge* was unusually "nervous", running to the edge of the web several times in response to apparently minor stimuli, pausing 30 sec. or more during sticky spiral construction several other times, and laying the sticky spiral in an irregular pattern. The possible reason for the spider's delay, its collapsed web, and its unusual behaviour was revealed when I searched the leaf where the hypothesized broken anchor would have ended, and found an immobile female *Chorizopes*.

When the *Leucauge* finished building, I detached the leaf gently and brought the *Chorizopes* into contact with an anchor line of the *Leucauge* web, which it stepped onto readily. The *Leucauge* immediately turned toward this sector and shook the web strongly, and the *Chorizopes* responded with vigorous shakes of its own. The *Leucauge* then ad-

vanced rapidly toward the invader, pausing to shake the web and receive answering shakes on the way. Despite its small size (estimated weight about one fourth that of the *Leucauge*), the *Chorizopes* stood its ground as the other advanced; the spiders met in a very brief tangle of legs, and the *Leucauge* fell free under the web, hung for a moment immobile on its trail line, then climbed back to the hub where it briefly cleaned one front leg in its mouth, then settled into its normal resting position.

For the next six minutes both *Leucauge* and *Chorizopes* remained nearly motionless, but toward the end of this period the *Leucauge* seemed to "sag" slightly, its abdomen tilting downward at the rear and its hind legs extending more than usual. My suspicion that it had been bitten in the brief encounter was confirmed when the *Chorizopes* finally began moving deliberately, first along the frame and then along a radius toward the hub, and the *Leucauge* failed to respond. Its only movement was a weak jerk when the *Chorizopes* touched it lightly with a leg; after the *Chorizopes* waited another minute, it submitted without resistance when it was bitten and then wrapped.

I then attempted to elicit another complete attack sequence by transferring the *Chorizopes* to three other *Leucauge* webs, but instead discovered the defensive behaviour of *Leucauge* sp. In a typical sequence, the *Chorizopes* was on an anchor thread when the owner shook the web aggressively and approached in an apparent attempt to chase it away. Instead of just walking along the anchor toward the invader, however, the *Leucauge* damaged its own web by breaking the line and proceeding by reeling up the broken end and paying out new line behind as it advanced. The defensive significance of this behaviour became clear

when the *Leucauge* stopped short of contact with the *Chorizopes* and released the anchor line it had been reeling in; the result was that the orb collapsed on that side, while the *Chorizopes* fell and dangled on the other end of the broken anchor line, all connection to the *Leucauge* web now lost.

DISCUSSION

The repeated observations of *Chorizopes* with dead araneids and its apparently purposeful attack behaviour both suggest that this species commonly preys on web building spiders. The fact that both Simon (1896) and I found it commonly at some sites but could not associate it with any web is in agreement with this idea. The spider's attack behaviour differs from that of other spider specialists in not involving stealthy approaches (some mimetids — Bristowe; *Argyrodes* spp. — Clyne 1979, Eberhard *in prep.*), imitations

of its host's courtship behaviour (some mimitids — Kaestner 1968), or quick-acting poison (some mimetids — Bristowe 1958). *Chorizopes* seems to rely instead on superior fighting ability after attracting its victim into range by giving aggressive reactions to web owners' threats. Perhaps the massive chelicerae with long fangs typical of this genus (Simon 1896) are important in these fights. *Chorizopes* may be limited to preying on individuals that are larger enough than itself that they will approach it close enough to be bitten.

ACKNOWLEDGEMENTS

It is a pleasure to acknowledge the help and hospitality of A. J. T. Johnsingh, M. Gadgil, A. Thangamani, J. Joseph, and N. N. Perumalraja. Norman Platnick and H. W. Levi identified the spiders, and M. J. W. Eberhard read the manuscript.

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